

**REMARKS**

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. § 1.111, and in light of the remarks which follow, are respectfully requested.

Claim 1 has been amended to correct a typographical error, by replacing "prior to coating" with --prior to curing--. This amendment is also supported by the specification, at least page 90, 1st and 2nd paragraphs. Claims 2, 6 and 9-11 were previously canceled.

No new matter has been added. Upon entry of the Amendment, claims 1, 3-5, 7, 8 and 12-15 will be all the claims pending in the application.

**I. Response to Rejection under 35 U.S.C. § 112, Second Paragraph**

Claims 1, 3-5, 7, 8 and 12-14 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicants respectfully submit that the present claims as amended are not indefinite.

Specifically, claim 1 has been amended to recite that "prior to curing, a coating amount of the silicone resin is from 0.4 to 45 mg/m<sup>2</sup>." Further, claim 1 recites "an actinic energy-curing resin comprising a silicone resin." The language "a coating amount of the silicone resin" means what it says, i.e., it refers to the amount of the "silicone resin" and not the "actinic energy-curing resin" which comprises the silicone resin.

In view of the above, the Examiner is respectfully requested to reconsider and withdraw the rejection.

**II. Response to Rejections under 35 U.S.C. § 103(a)**

a. Claims 1, 7, 8, 12, 14 and 15 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over WO 2003/055679 to Hayashida et al. The Examiner is relying on U.S.

Patent Application Publication No. 2005/0106404 to Hayashida et al. as the English language equivalent of WO '679.

b. Claims 3-5 were rejected under 35 U.S.C. § 103(a) as being obvious over Hayashida et al. '404 in view of U.S. Patent No. 6,551,710 to Chen et al.

c. Claim 13 was rejected under 35 U.S.C. § 103(a) as being obvious over Hayashida et al. '404 in view of U.S. Patent No. 6,329,035 to Iwasaki et al.

Applicants respectfully traverse the rejections for the following reasons.

The Office Action asserted that Hayashida et al. '404 teach “the two portions of the composite hard coat layer are each coated and then cured together, they will form a single composite layer, as there will be some intermixing of the two portions of the layer prior to curing” (page 3, lines 6-8 of the Office Action). Applicants respectfully disagree.

As shown in Fig. 1 of Hayashida et al. '404, the layer structure of the article is formed, a hard coat layer 2 contacting the surface of the article 1 and an anti-staining surface layer 3 contacting the surface of the hard coat layer 2. Hayashida et al. '404 disclose that the hard coat agent composition layer is dried to remove a solvent contained in the hard coat agent composition from the hard coat agent composition layer, and then the surface material layer is formed on the surface of the hard coat agent composition layer (see paragraph [0038]). Further, Hayashida et al. '404 disclose that at the time of film-forming by applying the surface layer material, there is used, as a solvent, a solvent in which the active energy ray-curable compound in the already-formed hard coat agent composition layer is not substantially dissolved (see paragraph [0041]).

Due to removal of a solvent of the hard coat agent composition and/or use of above-mentioned solvent, Applicants believe that it is not likely that intermixing of the two portions of the layer occurs prior to curing.

The Office Action further asserted at page 3, lines 21-22, that "the actinic energy-ray curing hard coat agent (paragraph [0059]) can be a compound having meth(acryloyl) groups (ethylenically unsaturated groups)."

Applicants note that Hayashida et al. '404 describe the actinic energy-ray curing hard coat agent. Further, Hayashida et al. '404 merely disclose that the surface layer material may contain, as a part of the components thereof, the active energy ray-curable compound used in the above-mentioned hard coat agent composition (paragraph [0070]). The compound having a meth(acryloyl) group is disclosed as many examples (paragraphs [0057]-[0061]).

Hayashida et al. '404 fail to disclose that the actinic energy-curing resin further comprises a first curing resin having a first molecule, the first molecule having three or more ethylenically unsaturated groups as set forth in present claim 1.

Moreover, the Office Action asserted at page 3, lines 9-12, that "a compound of Formula 3 [in Hayashida et al. '404] with m= 10, n=10 and R being a meth(acryloyl) group is a silicone resin with a silicon content of about 28 wt %."

Applicants wish to point out that Hayashida et al. '404 merely disclose that in formula (3), n is in the range of 5 to 1000, and m is in the range of 2 to 100. Hayashida et al. '404 disclose a broad range of n and m. Further, Hayashida et al. '404 do not provide any motivation or guidance to one of ordinary skill in the art in picking n and m, from numerous available options, so as to arrive at a silicone resin having specific silicon content, such as from 23 to 32 weight % recited in present claims 1 and 15.

As described in the present specification, the silicon content in the actinic energy-curing silicone resin used as the antifouling agent in the presently claimed invention is from 23 to 32 weight %. When the silicon content is higher than this range, the silicon localizes on the surface of the resin and the antifouling property does not last, or non-homogeneity of the surface composition is brought about. As a result, the hard coating article is not fit for use, in particular,

as the material for display or the protective film of an optical information recording media (page 11, line 18-page 12, line 3 of the present specification). These effects are further demonstrated by the comparative data in the specification (page 86, Table 4). For example, comparative examples h-13 and h-14 having Si content of 37.2% and 17.1%, respectively, were inferior in antifouling (and after wiping) property. These results could not have been expected in light of the disclosure of Hayashida et al. '404.

Moreover, Hayashida et al. '404 is silent on the (meth) acrylate group content in the silicone resin and the effects thereof.

Present claim 1 recites, *inter alia*, that in the silicone resin, 10 to 25% methyl groups are substituted with an alkyl group having a (meth) acrylate group. As described in the present specification, when the ratio of the (meth)acrylate group is less than this range, the bonding with the constituting materials of a hard coat layer other than silicone resins weakens, so that an antifouling property lowers by rubbing and wiping. While when the ratio of the acrylate group is more than this range, the silicon content cannot be made so high as the desired range, so that the antifouling property cannot be exhibited (page 13, lines 2-13).

Additionally, Chen et al. was relied upon merely as teaching adding polymerizable comonomers to a coating composition for an optical article. Iwasaki et al. was relied upon merely as teaching the thickness of a substrate for an optical disc. Thus, neither Chen et al. nor Iwasaki et al. rectifies the deficiencies of Hayashida et al. '404. Therefore, even if Hayashida et al. '404 is combined with Chen et al. or Iwasaki et al., the combinations still would not result in the subject matter recited in the present claims.

In view of the foregoing, Applicants respectfully submit that claims 1 and 15 are novel and patentable over Hayashida et al., alone or in combination with Chen et al. or Iwasaki et al., and thus the rejections should be withdrawn. Additionally, claims 3-5, 7, 8 and 12-14 depend

from claim 1, directly or indirectly, and thus are patentable over the cited references at least by virtue of their dependency.

**III. Conclusion**

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (202) 452-7932 at his earliest convenience.

Respectfully submitted,

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Date: September 29, 2008

By:



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